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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/430,747	10/29/1999	MIN-CHEOL HONG	0630-1005P	7701

7590 07/03/2002

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EXAMINER

DANG, DUY M

ART UNIT	PAPER NUMBER
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2621

DATE MAILED: 07/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MM

Office Action Summary

Application No.

09/430,747

Applicant(s)

HONG, MIN-CHEOL

Examiner

Duy M Dang

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4,9-12,19-22 and 27 is/are rejected.
- 7) ☒ Claim(s) 5-8,13-18 and 23-26 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 2621

DETAILED ACTION

1. The disclosure is objected to because of the following informalities:

In page 2: line 17, the "information(p=mtype" should be read as "information (p=mtype" (note that a space is needed to separate the "information" and "(p=mtype"); line 18, the "information(qz=Qp" should be read as "information (qz=Qp" (note that a space is needed to separate the "information" and "(qz=Qp"); line 19, the "decoder(not shown" should be read as "decoder (not shown" (note that a space is needed to separate the "decoder" and "(not shown"); and line 20, the "information(v=MV" should be read as "information (v=MV" (note that a space is needed to separate the "information" and "(v=MV").

Likewise, in page 3: the "images(for example" mentioned in line 10; page 4, the "selecting(filter mask" mentioned in line 14. The same informalities are occurred all over the place and thus Applicant's appropriate correction is required.

Equation (10) shown in pages 16-17 contains a mathematical symbol (i.e., the equal sign having one dot above and one dot under) which is unknown or improper. Likewise, said mathematical symbol is further present in equation (25) shown in page 29.

Art Unit: 2621

2. Claims 18, 22, and 27 are objected to because of the following informalities: In claim 18, line 1, add a space between "18.The"; In claim 22 line 5, replace "PCT-processing" by "DCT-processing"; In claims 20 line 4 and claim 27 line 4, replace "qnautized" by "quantized". Appropriate correction is required.

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-27 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In this case, the features of "obtaining a regularization parameter variable" recited in claim 1 lines 7 and 10 is not properly provided support by the instant specification because: according to equation (10) shown in page 16, the mathematical symbol (i.e., the equal sign having one dot above and one dot under) presented between the two terms on the right side of the "equation (10)" is not defined or described what it is. Since

Art Unit: 2621

said symbol is not defined, how can the "equation (10)" be solved? Thus, how can the so called "regularization parameter variable" be evaluated based on "equation (10)"?

Likewise, claims 12, 19-20, 22, and 27 are also rejected for the same reasons as applied to claim 1 above because the "regularization parameter variable" is recited in these claims.

Claims 2-11, 13-18, 21, and 23-26 are rejected for being dependent upon the rejected based claims.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-4, 9-12, 19-22, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liang et al. (US Patent No. 5,790,131).

Regarding claim 1, Liang teaches a method for recovering a compressed motion picture comprising the steps of:

defining a cost function (i.e. the "cost function C" mentioned in col. 8 line 50; the cost function " ΔC " mentioned in col. 3 line 14) having a smoothing degree of an image (i.e., and

Art Unit: 2621

the distortion difference " $(D_1 - D_2)$ " mentioned in col. 3 line 14; also the "distortion measurement D" (It is also called "error measure" according to col. 8 lines 51-54) mentioned in col. 8 lines 50-51 (note that the so called "smoothing degree" is defined as a difference according to instant specification) and a reliability with respect to an original image in consideration of the directional characteristics of the pixels which will be recovered and a plurality of pixels near the recovering pixels (i.e. the " $\lambda(R_1 - R_2)$ " mentioned in col. 3 line 14 and " λR " mentioned in col. 8 line 50 satisfy these so called "a reliability");

obtaining a regularization parameter variable having a weight value of a reliability with respect to an original image based on the cost function (i.e. the " λ " mentioned in col. 3 line 14 and lines 25-35 satisfies these claimed features).

Although Liang does not explicitly teach the features of "approximating the regularization parameter variable", Liang does teach the use of "various values of λ " in order to obtain the best result from the cost function according to col. 3 lines 25-38.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to readily understand that the use of various values of λ in order to

Art Unit: 2621

obtain the best result from the cost function is equivalent to the so called "approximating the regularization parameter variable".

The advanced statement as applied to claim 1 above are incorporated hereinafter. Liang further teaches another cost function (note the " ΔC " mentioned in col. 3 line 14 is the difference between the two cost functions or the cost differential according to col. 3 lines 14-15 thus Liang does inherently teach "another cost function" in order to obtain cost differential " ΔC ") as required by claims 2-3; an image decoding unit (i.e., the "decompression" mentioned in col. 4 lines 58-59) as required by claims 20 and 27.

The advanced statement as applied to claim 1 above are incorporated hereinafter. Regarding claims 12 and 19, Liang further teaches DCT and quantization (i.e., the "DCT method" mentioned in col. 1 lines 17-18 and "quantization" mentioned in col. 1 line 19), data blocks (i.e., "blocks" mentioned in col. 1 lines 22-23), transmitting (i.e., "transport" mentioned in col. 1 lines 57-58, and "transfer" mentioned in col. 1 line 66 to col. 2 line 1), motion vector information (i.e., "motion compensation method" mentioned in col. 1 lines 17-18), reversely quantization and reversely DCT processing (note that these claimed features are inherently taught by Liang's decompression

Art Unit: 2621

process mentioned in col. 4 line 58 in order to decompress properly the data compressed), and recovering an image similar to the original image (i.e., the decompressing method mentioned in col. 4 line 58). Liang fails to explicitly teach a projection method. However, such projection method is well known in the art (Official Notice). By using projection method would greatly allow improvement in blocking artifacts thereby achieving higher image quality and resulting in better image in both visually and objectively.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the conventional features in combination with Liang for that reasons.

Regarding claims 4, and 9-11 the limitations of the claim is rejected because it is well known and widely used in the art (Official Notice).

Regarding claim 21, Liang further teaches a DCT unit for performing a DCT (i.e., the DCT method mentioned in col. 1 lines 17-18), a vector projection unit for projecting a recovering pixel in accordance with a pixel value after the DCT process is performed (i.e., "motion compensation method" mentioned in col. 1 lines 17-18), and an IDCT unit (note that this claimed feature is inherently taught by Liang's decompression process mentioned

Art Unit: 2621

in col. 4 line 58 in order to decompress the data compressed properly).

The advanced statement as applied to claim 1 above are incorporated hereinafter. Regarding claim 22, Liang further teaches DCT and quantization (i.e., the "DCT method" mentioned in col. 1 lines 17-18 and "quantization" mentioned in col. 1 line 19), data blocks (i.e., "blocks" mentioned in col. 1 lines 22-23), transmitting (i.e., "transport" mentioned in col. 1 lines 57-58, and "transfer" mentioned in col. 1 line 66 to col. 2 line 1), motion vector information (i.e., "motion compensation method" mentioned in col. 1 lines 17-18), reversely quantization and reversely DCT processing (note that these claimed features are inherently taught by Liang's decompression process mentioned in col. 4 line 58 in order to decompress properly the data compressed), and recovering an image similar to the original image (i.e., the decompressing method mentioned in col. 4 line 58).

7. Claims 5-8, 13-18, and 23-26 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Art Unit: 2621

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. De Hann et al. (US Patent No. 6,385,245), Pearson (US Patent No. 6,195,632), de Queiroz et al. (US Patent No. 6,058,210), Legall (US Patent No. 5,878,166), Szeliski et al. (US Patent No. 5,611,000), Chen et al. (US Patent No. 5,563,813), Yang et al. ("Iterative Projection Algorithms For Removing The Blocking Artifacts OF Bock-DCT Compressed Images", IEEE 1993, pages: V405-V408), and Zakhor ("Iterative Procedures for Reduction of Blocking Effects in Transform Image Coding", IEEE Transactions on Circuits and Systems for Video Technology, Vol. 2, No. 1, IEEE March 1993, pages: 91-95) are the examples of the same field of invention.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duy M Dang whose telephone number is 7033051464. The examiner can normally be reached on Monday-Thursday from 6:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H Boudreau can be reached on 7033054706. The fax phone numbers for the organization where this application or proceeding is assigned are 7038729314 all communications.

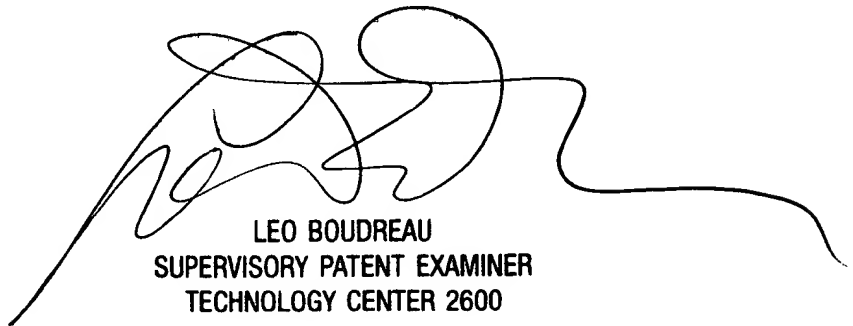
Application/Control Number: 09/430,747
Art Unit: 2621

Page 10

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 7033060377.

Dmd

dmd
6/25/02



LEO BOUDREAU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600